

Serial No. 10/557,526
Atty. Doc. No. 2003P02347WOUS

Amendments To The Claims:

Please amend the claims as shown.

1 – 10 (canceled)

11. (currently amended) A method for operating an internal combustion engine, comprising:

providing a fuel pressure accumulator in order to provide a fuel volume which must be injected, the fuel volume having a reference pressure and a pressure in the fuel pressure accumulator is generated via a high-pressure pump and the high-pressure pump is supplied with an adjustable fuel flow;

adjusting from a control unit that is connected to a volume flow control valve upstream of the high-pressure pump a first operating mode the pressure in the fuel pressure accumulator in a first operating mode to the reference pressure by regulating the fuel flow of the fuel delivered to the high-pressure pump depending on the fuel volume which must be injected and the reference pressure; and

separately adjusting from the control unit a second operating mode the pressure in the fuel pressure accumulator in a second operating mode to the reference pressure, adopted when the internal combustion engine is idling, by setting the pressure in the fuel pressure accumulator to the reference pressure by allowing fuel to escape from the fuel pressure accumulator in the event of a predetermined fuel flow.

12. (previously presented) The method as claimed in claim 11, wherein the second operating mode is adopted if the fuel flow is less than a first fuel flow and/or the first operating mode is adopted if the fuel flow exceeds a second fuel flow.

13. (currently amended) The method as claimed in claim 12, wherein the second operating mode is adopted ~~when the internal combustion engine is idling and/or in the case of~~ overrun cut-off.

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14. (previously presented) The method as claimed in claim 12, wherein the first fuel flow is smaller than the second fuel flow.

15. (previously presented) The method as claimed in claim 12, wherein the first and/or the second fuel flow is determined from a fuel leakage flow and the fuel leakage flow is determined in accordance with the steps, comprising:

setting an overrun operation of the internal combustion engine so that no fuel is injected;

setting the pressure in the fuel pressure accumulator to a first pressure value;

setting the reference pressure in order to increase the pressure in the fuel pressure accumulator in accordance with the first operating mode;

measuring the time for the pressure rise to the second pressure; and

determining the fuel leakage flow using the time for the pressure rise and using the pressure difference between first pressure and second pressure.

16. (previously presented) The method as claimed in one of the claims 15, wherein in the first operating mode essentially no fuel is allowed to escape from the fuel pressure accumulator.

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17. (currently amended) A fuel system for an internal combustion engine comprising:
a fuel pressure accumulator to provide a fuel volume that must be injected, the fuel volume having a reference pressure including a high-pressure pump to generate pressure in the fuel pressure accumulator;

a volume flow control valve to supply the high-pressure pump with an adjustable fuel flow;
a regulator valve to carry fuel away from the fuel pressure accumulator; and

a control unit that is connected to the volume flow control valve to adjust the pressure in the fuel pressure accumulator in a first operating mode by the fuel flow of the fuel that is delivered to the high-pressure pump depending on the fuel volume that must be injected and the reference pressure,

wherein the control unit is connected to the regulator valve in order to close the regulator valve in the first operating mode and to adjust the pressure in the fuel pressure accumulator to the reference pressure by carrying the fuel away from the fuel pressure accumulator in a second operating mode and wherein the control unit has a switch unit for switching between the first operating mode and the second operating mode, the switch unit switches into the second operating mode when the fuel flow through the volume flow control valve falls below a first fuel flow, and/or the switch unit switches into the first operating mode when the fuel flow through the volume flow control valve exceeds a second fuel flow.

18. (previously presented) The fuel system as claimed in claim 17, wherein in the second operating mode the regulator valve carries a surplus fuel away from the fuel pressure accumulator into a fuel line which connects the volume flow control valve to a low-pressure pump.

19. (previously presented) The fuel system as claimed in claim 17, wherein the regulator valve is arranged at an output of the high-pressure pump.

20. (cancelled)

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21. (new) A method for operating an internal combustion engine, comprising:
providing a fuel pressure accumulator in order to provide a fuel volume which must be injected, the fuel volume having a reference pressure and a pressure in the fuel pressure accumulator is generated via a high-pressure pump and the high-pressure pump is supplied with an adjustable fuel flow;

adjusting the pressure in the fuel pressure accumulator in a first operating mode to the reference pressure by regulating the fuel flow of the fuel delivered to the high-pressure pump depending on the fuel volume which must be injected and the reference pressure; and

adjusting the pressure in the fuel pressure accumulator in a second operating mode to the reference pressure by setting the pressure in the fuel pressure accumulator to the reference pressure by allowing fuel to escape from the fuel pressure accumulator in the event of a predetermined fuel flow,

wherein the second operating mode is adopted if the fuel flow is less than a first fuel flow and/or the first operating mode is adopted if the fuel flow exceeds a second fuel flow and

wherein the first and/or the second fuel flow is determined from a fuel leakage flow and the fuel leakage flow is determined in accordance with the steps, comprising:

setting an overrun operation of the internal combustion engine so that no fuel is injected;

setting the pressure in the fuel pressure accumulator to a first pressure value;

setting the reference pressure in order to increase the pressure in the fuel pressure accumulator in accordance with the first operating mode;

measuring the time for the pressure rise to the second pressure; and

determining the fuel leakage flow using the time for the pressure rise and using the pressure difference between first pressure and second pressure.

22. (new) The method as claimed in claim 21, wherein the second operating mode is adopted when the internal combustion engine is idling and/or in the case of overrun cut-off.

23. (new) The method as claimed in claim 21, wherein the first fuel flow is smaller than the second fuel flow.

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24. (new) The method as claimed in one of the claims 21, wherein in the first operating mode essentially no fuel is allowed to escape from the fuel pressure accumulator.